

Response to Office Action mailed December 8, 2005  
U.S. Application No. 10/646,134

**Amendments to the Specification:**

Please replace paragraph [0010] with the following amended paragraph:

[0010] Further, and with respect to the use of solvents for separation, a source of solvents not previously considered for bitumen separation is gas plant condensates, also referred to as gas plant diluent since the material is used to dilute the bitumen for transportation. Gas plant condensates (diluent) are used to dilute bitumen for transportation and generally include mixtures of paraffinic C4-C10 hydrocarbons as by-products of natural gas processing plants. During natural gas processing, various contaminants are removed through condensation to produce a significant volume of these by-product hydrocarbons. Gas plants are often located in relative proximity to bitumen recovery operations and, thus, can provide a ready source of solvents for use in a bitumen separation process.

Please replace paragraph [0024] with the following amended paragraph:

[0024] In a more specific embodiment, an integrated process of steam-based bitumen recovery and steam generation is provided comprising the steps of:

splitting bitumen into a heavy fraction and a light fraction in any one of or a combination of a two-stage flash separation process ~~or~~ and a diluent separation process;

emulsifying the heavy fraction with water and an emulsifier to form a burnable fuel; and,

burning the fuel in a combustion chamber to produce high pressure steam for steam-based bitumen recovery to recover bitumen as a produced water/bitumen mixture from an underground reservoir;

separating the produced water/bitumen mixture in bitumen/water separator to produce bitumen for step a) and produced water; and,

subjecting the produced water to a water treatment process to remove contaminants and to produce a treated water suitable for steam generation in step c).

Response to Office Action mailed December 8, 2005  
U.S. Application No. 10/646,134

Please replace paragraph [0030] with the following amended paragraph:

[0030] In one embodiment and with reference to Figure 2, bitumen 10 is split into two fractions using a two-stage flash separation. As indicated above, while simple flash separation might be occasionally used in refinery process operations for light crude separations, flash separation for a heavy feed such as bitumen 10 has not been conducted possibly due to its high density, viscosity and asphaltene content. As shown, the flash separation system includes both a single stage atmospheric chamber 30 and a single stage vacuum chamber 32 wherein the bottom fraction 32a from the vacuum chamber removes a heavy fraction for subsequent use as a fuel and the upper fraction 32b removes a lighter fraction.

Please replace paragraph [0036] with the following amended paragraph:

[0036] More specifically, the asphaltic heavy bottom phase 52a separates out and is used as fuel and the lighter overhead phase 52b, which is mixed with the gas plant condensate, goes to the overall diluted bitumen pool. Various ratios of diluent to bitumen were investigated in the laboratory to determine how to minimize diluent loss in the bottom phase as well as to control the amount of bottom phase ~~provide~~ provided through separation.

Please replace paragraph [0051] with the following amended paragraph:

[0051] While it is clear that the gas plant condensate is not nearly as efficient as other lighter solvents, at higher solvent/bitumen ratio, it produces a desirable amount of sufficient separation to meet fuel requirements for a typical bitumen recovery operation. Further, the use of gas plant condensates is advantaged over pure and lighter solvents in that they do not have to be recovered and recycled as in conventional deasphalting operations. That is, the solvent/diluent along with the deasphalted light fraction can be blended with the rest of the diluted bitumen pool for the market or further downstream processing.

Please replace paragraph [0053] with the following amended paragraph:

[0053] The hot resid and hot surfactant water were pumped separately in an 80: 20 ratio through a static mixer combination with the first static ~~mixture mixer~~ having a 1.27 cm diameter

Response to Office Action mailed December 8, 2005  
U.S. Application No. 10/646,134

with 7 elements and the second static ~~mixture~~ mixer having a 0.48 cm diameter ~~static mixer~~  
with 14 elements.

**Support for Amendment to the Specification**

The above changes to the specification are to correct obvious typographical, diction, and verbosity errors. The changes are supported by the clear intended meaning of the paragraphs amended.